

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A communication method in an OFDM (Orthogonal Frequency Division Multiplexing) system, the method comprising:

adapting modulation schemes, coding rates, pilot patterns, and power levels of a signal to produce an adapted signal, wherein:

the adaptation process is performed in a transmitter; and

the adaptation process is based on channel state information;

generating, by the transmitter, a control information signal representing adaptation information, wherein the control information signal includes a single index value that refers to adaptation details of a modulation scheme, coding rate, pilot pattern, and power level;

transmitting the adapted signal and the control information signal by the transmitter, separately or jointly;

receiving the adapted signal and the control information signal by a receiver;

looking-up the adaptation details from a look-up table at the receiver using the index value, wherein:

the table includes multiple sets of adaptation schemes employed by the transmitter; and

the number of pilot patterns associated with a particular combination of a modulation scheme and a coding rate is a function of how often the particular combination is used for transmission;

measuring the channel state by the receiver, based on the received signals, wherein the measurements include: signal strength, average SINR (signal to interference plus noise ratio), variance in time, variance in frequency, variance in space, BER (bit error rate), FER (frame error rate), MSE (mean square error), or any combination thereof; and

forming a probing sequence using the channel state measurements, and/or computed channel quality information, or channel state measurements and computed channel quality information.

2. (Currently Amended) The method of claim 1, wherein the channel quality information based on channel state measurements during ~~the a~~ previous transmission is used by a transmitter to determine an adaptation scheme for the next transmission, or wherein for a retransmission the transmitter selects an adaptation scheme from one of the previous transmissions that is appropriate for the retransmission.

3. (Previously Presented) The method of claim 1, wherein the channel state measurements for a receiver is periodically updated on a feedback channel even when there is no forward transmission targeted to that receiver and wherein a receiver measures channel state from a common broadcast transmission or data transmission targeted to other receivers.

4. (Currently Amended) The method of claim 1, wherein the probing sequence is transmitted from the receiver to the transmitter using an overlay scheme in which the probing sequence is overlaid on a data transmission and the transmitter estimates ~~the a~~ channel profile in the time domain, the frequency domain, and/or the time and frequency domains based on the received probing sequence.

5 - 21. (Canceled)

22. (Currently Amended) A communication method in an OFDM (Orthogonal Frequency Division Multiplexing) receiver, the method comprising:

receiving an adapted signal from a transmitter, the transmitter adapting modulation schemes, coding rates, pilot patterns, and power levels of the signal based on channel state information;

receiving a control information signal from the transmitter, the control information signal including an index value that refers to adaptation details of a modulation scheme, coding rate, pilot pattern, and power level used by the transmitter;

looking-up the adaptation details from a look-up table at the receiver using the index value, wherein:

the table includes multiple sets of adaptation schemes employed by the transmitter; and

the number of pilot patterns associated with a particular combination of a modulation scheme and a coding rate is a function of how often the particular combination is used for transmission;

measuring the channel state based on the received signals, wherein the measurements include: signal strength, average SINR (signal to interference plus noise ratio), variance in time, variance in frequency, variance in space, BER (bit error rate), FER (frame error rate), MSE (mean square error), or any combination thereof; and

forming a probing sequence using the channel state measurements, ~~and/or~~ computed channel quality information, or channel state measurements and computed channel quality information.

23. (Previously Presented) The method of claim 22, wherein the channel state measurements for a receiver is periodically updated on a feedback channel even when there is no forward transmission targeted to that receiver and wherein a receiver measures channel state from a common broadcast transmission or data transmission targeted to other receivers.

24. (Previously Presented) The method of claim 22, wherein the probing sequence is transmitted from the receiver to the transmitter using an overlay scheme in which the probing sequence is overlaid on a data transmission.

25. (Currently Amended) The method of claim 24, wherein the transmitter estimates ~~the a~~ the a channel profile in the time domain, the frequency domain, ~~and/or the~~ time and frequency domains based on the received probing sequence.